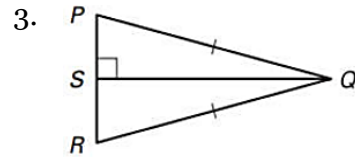Name: _____

5.6 ~ HL Congruence Theorem

Past due on: _____ Period _____
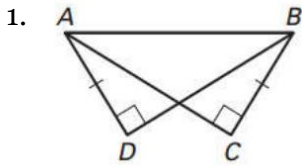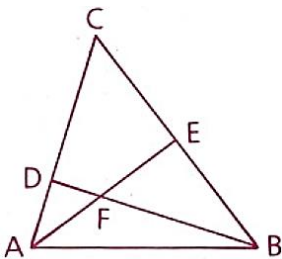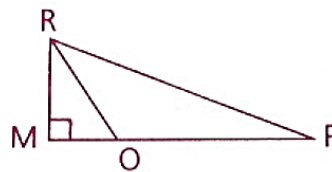
Are the triangles congruent? If so, identify the congruence theorem that would prove it.

1.

2.

3.
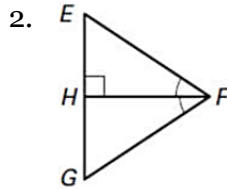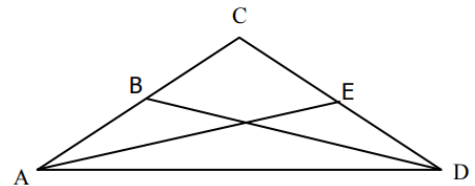
4. Given: $\overline{AE}$ & $\overline{BD}$ are altitudes, $\overline{AE}$ is also a median; $m\angle CAB = 80°, m\angle CBA = 60°,\ CE = x^2 - 56, BE = x$
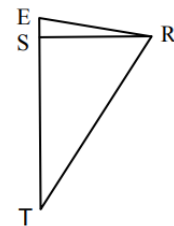
   Find: $m\angle C, m\angle AFB,$ & BC

5. Given: $m\angle P = 10°; \overline{RM}$ is an altitude; $\overrightarrow{RO}$ bisects $\angle MRP$

   Find: $m\angle ORP$ & $m\angle MOR$

6. Given: $\overline{AE}$ & $\overline{BD}$ are medians; $BC = 6y + 10, AB = y^2 + 3y,$
   $CE = 6x + 12, ED = 2x + 60$
   a. Find the values of x and y.
   b. Find the range of possible lengths for side $\overline{AD}$. *(You may want to refer to Lesson 5.1)*

7. Given: $\overline{RS}$ is an altitude; $m\angle SRT = 4x - 8$; $m\angle STR = 6x + 13$
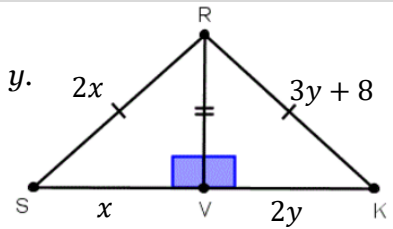   Find the value of x.

8. The triangles shown are congruent by HL (using the hypotenuse & leg shown).
   a. Set up and solve a system of equations to find the values of x and y.
   b. Use the Pythagorean Theorem to find the length of the third side.

$3y + x$

$y - x$

$x + 5$

$y + 5$
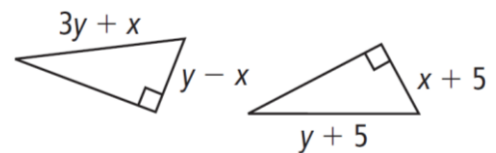
9. Given: $\triangle SRV \cong \triangle KRV$

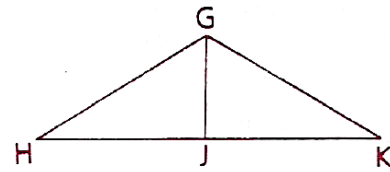   a. Set up and solve a system of equations to find the values of x & y.

    b. $m\angle S = 9n^2 - 22n$ & $m\angle K = 4n^2 - 8$. Set up and solve a quadratic equation to find the value of n that makes sense. Then find $m\angle SRV$.

10. Given: $\overline{GJ}$ is an altitude & a median
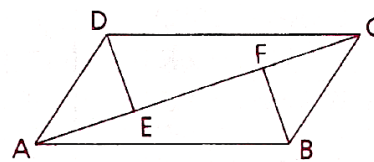
    Prove: $\triangle HGJ \cong \triangle KGJ$

STATEMENTS	REASONS

11. Given: $\overline{AE} \cong \overline{CF}$

             $\overline{DC} \cong \overline{BA}$

             $\angle BFA$ & $\angle DEC$ are right $\angle$s
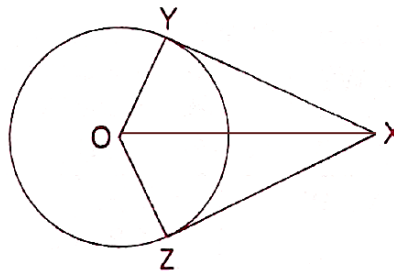
    Prove: $\triangle CDE \cong \triangle ABF$

STATEMENTS	REASONS

Chapter 5: Triangles & Congruence

12.   Given: $\overline{YO} \perp \overline{YX}$
                  $\overline{ZO} \perp \overline{ZX}$
                  $\overline{XY} \cong \overline{XZ}$
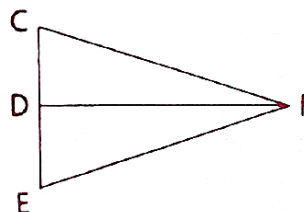
       Prove: $\triangle YOX \cong \triangle ZOX$

STATEMENTS	REASONS

13.   Given: $\overline{FD}$ is an altitude
                  $\overline{FD}$ bisects $\angle CFE$

       Prove: $\triangle CDF \cong \triangle EDF$

STATEMENTS	REASONS

Chapter 5: Triangles & Congruence
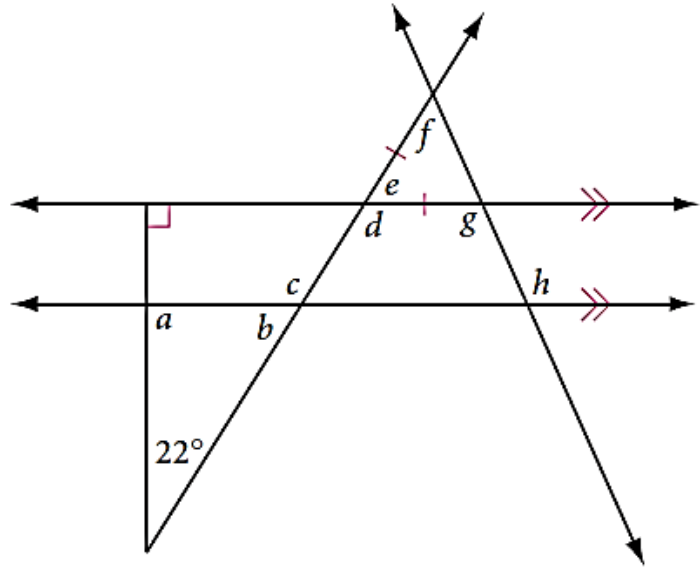
14. Find the indicated angle measures.
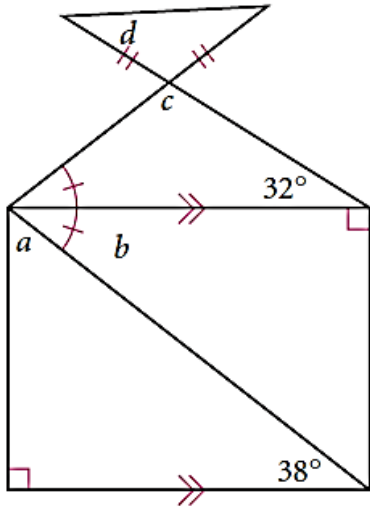
15. Find the indicated angle measures.

16. Find the indicated angle measures.

Chapter 5: Triangles & Congruence